

REMARKS

Reconsideration and allowance in view of the foregoing amendments and the following remarks are respectfully requested.

Claims 1-31 and 38-51 are pending, claims 21 and 25 having been amended.

Applicants wish to thank the Examiner for indicating that claim 26 contains allowable subject matter and would be allowable if rewritten to overcome the rejection under 35 U.S.C. 112, second paragraph and to include all of the limitations of the base claim and any intervening claims.

The Examiner rejected claims 21, 25 and 26 under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. In particular, the Examiner alleges that "said field-of-view" in claims 21 and 25 lacks proper antecedent basis.

Applicants amended "said field-of-view" to "a field-of-view" in claims 21 and 25. Applicants submit that the claims are now definite and respectfully request that the rejection to claims 21, 25 and 26 be withdrawn.

The Examiner rejected claims 1-25, 27-31, and 38-51 under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent 4,736,436 to Yasukawa et al. (Yasukawa). Applicants respectfully traverse the rejection.

Yasukawa relates to an information extraction device for extracting information of a picture by means of mapping. The device can be used to obtain information concerning a picture, such as the existence of a straight line, the intersection of straight lines, and the three-dimensional direction of straight lines or parallel lines. This information is useful for pattern recognition of an object, such as in the case of pattern recognition by an industrial robot. Yasukawa discloses that when a spherical camera is used as an eye of a robot, three-dimensional measurement is accurately performed. Therefore, a remote operator can feel as if he is watching an actual picture. See Column 15, lines 2-7.

As admitted by the Examiner on page 2 of the Official Action, Yasukawa does not disclose, teach or suggest a control input for receiving a signal representing a selection of a portion of an image. The Examiner alleges that using input means to selectively modify a portion of an image in a memory is notoriously well known in the art. The Examiner appears to be of the belief that because input devices such as joy sticks, computer mice or keyboards are

well known in the art, that it would be obvious to one of ordinary skill in the art to include a control input into Yasukawa so that the image can be selectively modified.

Claims 1-10 and 50-51 require a signal processor for converting digital images for use in an imaging system. The signal processor comprises a control input for receiving a signal representing a selection of a portion of an image, wherein the selection ranges across a field-of-view, and a converter responsive to the control input for converting stored digital data in digital data memory representing a planar image for display. Thus, the control input is used to make a selection of a portion of an image ranging across the field-of-view, and the converter is responsive to the control input that receives a signal representing the selection. The prior art, i.e., the very existence of input means such as joy sticks, computer mice or keyboards, does not disclose, teach or suggest providing a control input for receiving a signal representing a selection of a portion of an image, wherein the selection ranges across the field-of-view. In particular, the prior art does not teach converting stored digital data in digital data memory, responsive to a control input which receives a signal representing a selection of a portion of an image, wherein the selection ranges across a field-of-view.

Similar to claim 1, claim 11 is directed to a method of converting a digital image for use in an imaging system, comprising selecting a portion of the image, wherein the selecting step selects the portion across a field-of-view, and converting the stored digital data representing the selected portion into digital data representing a perspective-corrected image for display. Yasukawa is completely devoid of disclosing, teaching or suggesting how to select a portion of an image across the field-of-view, and is completely devoid of disclosing, teaching or suggesting converting stored digital data representing the selected portion into digital data representing a perspective-corrected image for display. Merely recognizing that input means such as joy sticks, computer mice, or keyboards are readily available does not satisfy the deficiencies of Yasukawa. The combination of Yasukawa and the knowledge that input means, such as joy sticks, computer mice or keyboards exist, do not disclose, teach or suggest the selecting and converting steps of claim 11 and dependent claims 12-20.

Claim 21 requires a method comprising converting digital data representing a selected portion of a partial spherical image into digital data representing a perspective-corrected view for display, wherein the selected portion is chosen across a field-of-view. Yasukawa does not disclose or suggest anything regarding selecting a selected portion across a field-of-view and

therefore, does not disclose or suggest converting a digital portion representing the selected portion. Knowledge of well-known input means does not, combined with Yasukawa, disclose or suggest selecting a selected portion across a field-of-view. Neither Yasukawa nor knowledge of well-know input means discloses how to select such a selected portion across a field-of-view.

Claim 22 requires a control input for receiving a signal representing a selected viewing angle, wherein the viewing angle is chosen across the field-of-view. Claim 22 is similar to claim 1 and is patentable over Yasukawa and well-known input means for at least the reasons discussed above regarding claims 1-10.

Further, at least for the reasons discussed above, Yasukawa and the knowledge of well known input means do not disclose, teach or suggest a method for converting digital images for use in an imaging system, comprising selecting a viewing angle, wherein the viewing angle is chosen from the angles varying across a field-of-view, and processing, responsive to the selected viewing angle, the stored digital data according to the selected viewing angle and then outputting a perspective-corrected image for display, as required by claim 23. Yasukawa is completely devoid of selecting a viewing angle varying across the field-of-view, and processing the stored digital data according to the selected viewing angle to output a perspective-corrected image for display.

Claims 22-24 are similar to claim 21 and are patentable over Yasukawa and the knowledge of well known input means, at least for the reasons discussed above.

Claim 25 relates to a memory for a signal processor and requires a data structure, responsive to a control input representing a selection of a portion of an image stored in the memory, wherein the selection is chosen across the field-of-view. The cited prior art does not disclose such a feature and, as discussed previously, the cited prior art does not disclose a control input representing a selection of a portion of an image stored in the memory, wherein the selection is chosen across the field-of-view.

Claim 27 requires a memory for a signal processor, comprising a data structure, responsive to a control input representing a selection of a portion of an image, the data structure representing an orthogonal set of transformation algorithms. Yasukawa does not mention a data structure, responsive to a control input representing a selection of a portion of an image. Further, neither Yasukawa nor well known input devices disclose, teach or suggest the data structure representing an orthogonal set of transformation algorithms.

Claims 28-31 are similar to the previous claims in that they recite a signal processor for converting digital images, comprising a control input for receiving a signal representing a selection of a portion of that image, wherein the selection is chosen from across the field-of-view. At least for the reasons discussed above, Yasukawa and knowledge of well known input means does not disclose, teach or suggest such a feature.

Similarly, claims 38-45 recite a method for displaying a portion of an image having a field-of-view greater than or equal to 180° , comprising converting at least one selected portion to a perspective-corrected image in real-time in response to information included in the input. At least for the reasons discussed above, claims 38-45 are patentable over the cited prior art.

Claim 46 requires an apparatus for displaying a portion of an image having a field-of-view greater than or equal to 180° , comprising converter means for converting at least one selected portion to a perspective-corrected image in real-time in response to and based on information included in the input. At least for the reasons mentioned above, claim 46 is patentable over the cited prior art.

Claim 47 recites an apparatus for displaying a portion of an image, having a field-of-view greater than or equal to 180° , comprising a converter for converting at least one selected portion to a perspective-corrected image in real-time in response to and based on information included in the input. At least for the reasons mentioned above, claim 47 is patentable over the cited prior art.

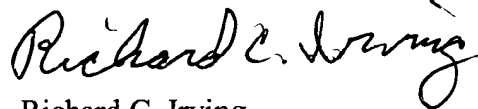
Claim 48 requires a method for obtaining a wide angle image having a field-of-view greater than or equal to 180° comprising storing a wide-angle image in a format for subsequent display, wherein the format is capable of transformation from the wide-angle image to a perspective-corrected image in real-time responsive to and based on information included in an input. Claim 49 recites a similar feature. At least for the reasons discussed above, claims 48 and 49 are patentable over the cited prior art.

For at least the reasons discussed above, Applicants submit that the claims are patentable over Yasukawa and respectfully request that that rejection be withdrawn.

Applicants submit that the application is now in condition for allowance and a notice to that effect is earnestly solicited.

Applicants representative respectfully requests that the Examiner contact him at the number indicated below if he has any questions regarding this amendment, in order to further advance prosecution of this case.

Respectfully submitted,



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MARKED-UP VERSION SHOWING CHANGES

IN THE CLAIMS:

Changes were made as follows:

21. (Thrice Amended) A method for converting a digital image for use in an imaging system comprising the steps of:

storing digital data representing a partial spherical image; and

converting digital data representing a selected portion of the partial spherical image into digital data representing a perspective-corrected view for display, wherein said selected portion is chosen across ~~said~~ a field-of-view.

25. (Thrice Amended) A memory for a signal processor, comprising:

a data structure, responsive to a control input representing a selection of a portion of an image stored in said memory, wherein said selection is chosen across ~~said~~ a field of view, said data structure representing an orthogonal set of transformation algorithms; and

a buffer memory adapted to store digital image data for transformation.